

50103-531/STL 3320

PERPENDICULAR MAGNETIC  
RECORDING MEDIA WITH IMPROVED  
CRYSTALLOGRAPHIC ORIENTATIONS  
AND METHOD OF MANUFACTURING  
SAME

ABSTRACT OF THE DISCLOSURE

A perpendicular magnetic recording medium, comprising:

- (a) a non-magnetic substrate having a surface; and
- (b) a layer stack formed over the substrate surface, comprising in

overlying sequence from the substrate surface:

- 5 (i) a magnetically soft underlayer;
- (ii) an interlayer structure for crystallographically orienting a  
layer of a perpendicular magnetic recording material formed  
thereon; and
- (iii) at least one crystallographically oriented magnetically hard  
10 perpendicular recording layer;

wherein the magnetically soft underlayer is sputter-deposited at a  
sufficiently large target-to-substrate spacing and at a sufficiently low gas pressure  
selected to provide the underlayer with a smooth surface having a low average  
surface roughness Ra below about 0.3 nm, as measured by Atomic Force  
15 Microscopy (AFM).